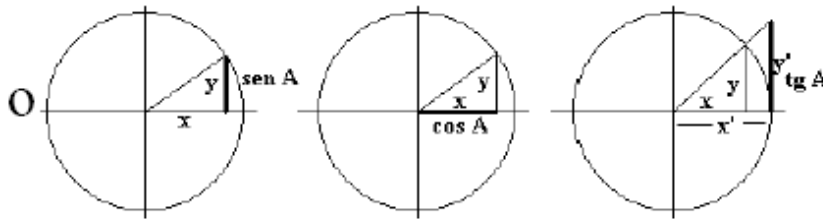


Trigonometría – Resumen de fórmulas

Razones trigonométricas

$$\operatorname{sen} \alpha = \frac{\text{cateto opuesto}}{\text{hipotenusa}} \quad \cos \alpha = \frac{\text{cateto contiguo}}{\text{hipotenusa}} \quad \operatorname{tg} \alpha = \frac{\text{cateto opuesto}}{\text{cateto contiguo}} \quad \operatorname{tg} \alpha = \frac{\operatorname{sen} \alpha}{\cos \alpha}$$

$$\operatorname{cosec} \alpha = \frac{1}{\operatorname{sen} \alpha} \quad \sec \alpha = \frac{1}{\cos \alpha} \quad \operatorname{cotg} \alpha = \frac{1}{\operatorname{tg} \alpha}$$



Relaciones Fundamentales

$$\operatorname{sen}^2 \alpha + \cos^2 \alpha = 1$$

$$1 + \operatorname{tg}^2 \alpha = \sec^2 \alpha$$

$$1 + \operatorname{cotg}^2 \alpha = \operatorname{cosec}^2 \alpha$$

Razones trigonométricas de suma o resta de ángulos

$$\operatorname{sen}(\alpha \pm \beta) = \operatorname{sen} \alpha \cdot \cos \beta \pm \cos \alpha \cdot \operatorname{sen} \beta$$

$$\cos(\alpha \pm \beta) = \cos \alpha \cdot \cos \beta \mp \operatorname{sen} \alpha \cdot \operatorname{sen} \beta$$

$$\operatorname{tg}(\alpha \pm \beta) = \frac{\operatorname{tg} \alpha \pm \operatorname{tg} \beta}{1 \mp \operatorname{tg} \alpha \cdot \operatorname{tg} \beta}$$

Razones trigonométricas del ángulo doble

$$\operatorname{sen}(2\alpha) = 2 \cdot \operatorname{sen} \alpha \cdot \cos \alpha$$

$$\cos(2\alpha) = \cos^2 \alpha - \operatorname{sen}^2 \alpha$$

$$\operatorname{tg}(2\alpha) = \frac{2 \operatorname{tg} \alpha}{1 - \operatorname{tg}^2 \alpha}$$

Razones trigonométricas del ángulo mitad

$$\operatorname{sen}\left(\frac{\alpha}{2}\right) = \pm \sqrt{\frac{1 - \cos \alpha}{2}}$$

$$\cos\left(\frac{\alpha}{2}\right) = \pm \sqrt{\frac{1 + \cos \alpha}{2}}$$

$$\operatorname{tg}\left(\frac{\alpha}{2}\right) = \pm \sqrt{\frac{1 - \cos \alpha}{1 + \cos \alpha}}$$

Sumas y Restas de senos y cosenos

$$\operatorname{sen} A + \operatorname{sen} B = 2 \operatorname{sen} \left(\frac{A+B}{2} \right) \cdot \cos \left(\frac{A-B}{2} \right)$$

$$\operatorname{sen} A - \operatorname{sen} B = 2 \operatorname{sen} \left(\frac{A-B}{2} \right) \cdot \cos \left(\frac{A+B}{2} \right)$$

$$\cos A + \cos B = 2 \cos \left(\frac{A+B}{2} \right) \cdot \cos \left(\frac{A-B}{2} \right)$$

$$\cos A - \cos B = -2 \operatorname{sen} \left(\frac{A+B}{2} \right) \cdot \operatorname{sen} \left(\frac{A-B}{2} \right)$$